

**REMARKS**

The present application was filed on July 10, 2003 with claims 1 through 21. Claims 2, 6, 10-13, 16 and 18 have been previously canceled without prejudice. Claims 10-13 had been withdrawn from consideration in response to a restriction requirement. Therefore, claims 1, 3-5, 7-9, 14, 15, 17 and 19-21 are presently pending in the above-identified patent application. Applicant herein proposes to amend claims 1, 14 and 21. Support for the amendments can be found, for example, on page 12, lines 18-19. No new matter is being introduced.

This amendment is submitted pursuant to 37 CFR §1.116 and should be entered. The Amendment places all of the pending claims, i.e., claims 1, 3-5, 7-9, 14, 15, 17 and 19-21, in a form that is believed allowable, and, in any event, in a better form for appeal. It is believed that examination of the pending claims as amended, which are consistent with the previous record herein, will not place any substantial burden on the Examiner, and Applicants submit that the amendment (which is directed to the outstanding §101 rejection) does not include matter extraneous to the previous record.

In the Office Action, the Examiner rejected claims 1, 3-5, 7-9, 14-15, 17 and 19-21 under 35 U.S.C. §101 because the claimed invention is allegedly directed to non-statutory subject matter, and rejected claims 1, 3-5, 7-9, 14-15, 17 and 19-21 under 35 U.S.C. §103(a) as allegedly being unpatentable over Eisenberg et al. (Nature, volume 299, 1982, pages 371-274) (hereinafter "Eisenberg") in view of Silverman (PNA; April 24, 2001; volume 98, pages 4996-5001) (hereinafter "Silverman").

The comments of the Examiner in forming the rejections are acknowledged and have been carefully considered.

Section 101 Rejection

In the Office Action, the Examiner rejected claims 1, 3-5, 7-9, 14, 15, 17 and 19-21 under 35 U.S.C. §101 as allegedly being directed to non-statutory subject matter.

5 Specifically, beginning on page 4 of the Office Action, the Examiner stated that

...the method to be performed does not produce a tangible result. For example, the method as claimed may take place entirely within the confines of a computer without any communication to the outside world and without using or making available for use, the results of the computation to a “user”....

10 Applicant argues that the amendment to the instant set of claims of outputting the global linear hydrophobic moment to at least one of a user, a display, and one or more additional computers on a network overcomes the rejections of record. However, this argument is not persuasive because the global linear hydrophobic moment can still be output to one or more additional computers on a network and still not be accessible to a user.

Applicant, as proposed herein, has amended independent claims 1, 14 and 21 to include the limitation of outputting the global linear hydrophobic moment to a user. Support for the amendment can be found, for example, on page 12, lines 18-19. As such, Applicant respectfully asserts that the amendment overcomes the rejection noted above.

Therefore, Applicant respectfully asserts that independent claims 1, 14 and 21, as amended, overcome the §101 rejection. Also, Applicant further submits that by virtue of their dependence on allowable independent claims 1 and 14, claims 3-5, 7-9 and 15, 17-20, respectively, are directed to statutory subject matter in their own right.

Thus, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1, 3-5, 7-9, 14, 15, 17 and 19-21 under 35 U.S.C. §101.

30 Section 103(a) Rejection

The Examiner also rejected claims 1, 3-5, 7-9, 14, 15, 17 and 19-21 under 35 U.S.C. §103(a) as allegedly being unpatentable over Eisenberg in view of Silverman. Applicant respectfully traverses the Examiner’s rejection.

With regard to the §103 rejections, Applicant initially notes that a proper *prima facie* case of obviousness requires that the cited references when combined must “teach

or suggest all the claim limitations,” and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings. See MPEP §706.02(j). Therefore, as an initial matter, Applicant respectfully submits that  
5 the cited combination of references does not teach or suggest all of the limitations of the claims.

For example, Applicant asserts that the combination of references do not teach or suggest the limitations of enhancing correlation between residue centroid magnitude and residue solvent accessibility, wherein the correlation between residue centroid magnitude  
10 and residue solvent accessibility is enhanced using a distance metric and using the first-order hydrophobic moment and the enhanced correlation between residue centroid magnitude and residue solvent accessibility to define the global linear hydrophobic moment, as presently claimed in independent claims 1, 14 and 21. (Emphasis added)

On page 8 of the outstanding Office Action, the Examiner concedes that

15 Eisenberg et al. does not show correlation enhancement between residue centroid magnitude and solvent accessibility....

Subsequently, on page 8 of the Office Action, the Examiner states that

20 [i]n equation [13] on page 4998 of Silverman, a first order hydrophobic moment imbalance about the entire protein is derived, accounting for hydrophobicity and solvent accessible surface area.

Applicant respectfully submits that “accounting for hydrophobicity and solvent accessible surface area” falls far short of teaching or suggesting enhancing correlation  
25 between residue centroid magnitude and residue solvent accessibility. Further, on page 9 of the Office Action, the Examiner states that

30 [i]n equations [13] and [14] on page 4998 of Silverman, distance metrics, ellipsoidal metrics, and a solvent accessibility are all used to enhance the centroid magnitude.

Applicant, again, respectfully asserts that this does not teach or suggest the claim limitations in question, namely, enhancing correlation between residue centroid magnitude and residue solvent accessibility. (Emphasis added)

Consequently, Applicant argues that the cited Silverman reference does not teach or suggest the limitation of enhancing correlation between residue centroid magnitude and residue solvent accessibility, wherein the correlation between residue centroid magnitude and residue solvent accessibility is enhanced using a distance metric. In addition, as a matter of practicality, the cited Silverman reference also does not teach the limitation of using the first-order hydrophobic moment and the enhanced correlation between residue centroid magnitude and residue solvent accessibility to define the global linear hydrophobic moment.

As a result, because the Examiner has already conceded that Eisenberg does not teach or suggest the claimed limitations in question either, Applicant respectfully submits that the combination of references does not teach or suggest the limitations in question, and therefore, that the §103 rejection is improper. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Additionally, Applicant argues that there is inadequate motivation to combine the two references. On page 9 of the Office Action, the Examiner states that

[i]t would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the helical hydrophobic moment study of Eisenberg et al. by use of the hydrophobic moment study of Silverman wherein the motivation would have been that using residue centroids instead of atomic points yields a more ideal overall shape and moment of the protein.

Applicants submit that these explanations are conclusory statements of the sort rejected by both the Federal Circuit and the U.S. Supreme Court. *See KSR v. Teleflex*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (U.S., Apr. 30, 2007), quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

Eisenberg teaches a measure of the amphiphilicity of a segment of a secondary protein structure (that is, a helix). See, Eisenberg, title. As such, a person of ordinary

skill in the art would not be motivated to combine the Eisenberg reference with the Silverman reference, which does not teach measuring amphiphilicity of a helix but rather spatial transition of the hydrophobicity from the interior to the exterior of a protein. See, Silverman, page 4996, right column, second paragraph. Consequently, Applicant respectfully submits that the combination of references is improper, and therefore, that the §103 rejection is improper.

As noted herein, Applicant respectfully asserts that independent claims 1, 14 and 21 overcome the rejection as allegedly unpatentable over the references cited in this rejection. Also, Applicant further submits that by virtue of their dependence on independent claims 1 and 14, claims 3-5, 7-9 and 15, 17-20, respectively recite patentable subject matter in their own right. If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, Applicant respectfully requests withdrawal of the §103(a) rejection from claims 1, 3-5, 7-9, 14, 15, 17 and 19-21.

All of the pending claims, i.e., claims 1, 3-5, 7-9, 14, 15, 17 and 19-21, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,



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